

**EAGLEBROOK****Material Safety Data Sheet**Product Information/Emergency Phone (219) 322-2568(800) 428-3311Transportation Emergency Phone (800) 124-9300 (Chemtrec)**MATERIAL SAFETY
DATA SHEET****FERRICLEAR™****I. Identification**Chemical Name FerriClearSynonyms Iron SaltProper DOT Shipping Name Corrosive Liquid N.O.S. - UN 1760DOT Hazard Class CorrosiveChemical Family AcidFormula $\text{Fe}_2(\text{SO}_4)_3 \cdot \text{OH}$ CAS Registry No. 127687-53-8

NOTE: Meets AWWA Standards for ferric sulfate in potable standard AWWA B406-87.

II. Ingredients

Principal Hazardous Components

CAS Number

Percent

Sulfuric Acid#7664-93-8< 0.1%**III. Physical Data**Boiling Point (°F) 212°Specific Gravity ($\text{H}_2\text{O} = 1$) 1.46 - 1.58Solubility in Water Infinite1.586 = 121 - 12.6 °FAppearance and Odor Red-brown color with no odor**IV. Fire and Explosion Hazard Data**Flash Point (method used) NoneFlammable Limits N.A.Extinguishing Media As appropriate for combustibles in area.Special Fire Fighting Procedures Closed containers may heat above the boiling point and rupture violently.Unusual Fire and Explosion Hazards May react with metals to generate hydrogen inside tanks or drums.Avoid pressure build-up and/or ignition source.**V. Health Hazard Data**OSHA Permissible Exposure Limits N.A.Effects of Overexposure Will cause eye and skin burns. Inhalation of mist from hot ferric sulfate can cause injury to lungs.Ingestion can cause severe injury or death.Emergency and First Aid Procedures Speed in removing ferric sulfate from eyes or skin is of primary importance. Flush eyes from eyewash fountain or wash skin for a minimum of 15 minutes. For inhalation: remove to uncontaminated area. For ingestion: drink largeamounts of water. DO NOT induce vomiting. Consult a physician or hospital emergency room as soon as possible.

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VI. Reactivity Data

Instability Stable

Incompatible Materials Rapidly corrodes most metals. Avoid contact with aluminum/aluminum alloys, carbon steel, copper/copper alloys and nylon. Also avoid contact with all alkaline materials.

Decomposition Wt. Not Occur

Hazardous Polymerization Will Not Occur

VII. Environmental Protection Procedures

Spill Response Confine to immediate area if possible. Neutralize with lime, limestone or soda ash. Soda ash and limestone generate CO₂ requiring adequate ventilation.

Waste Disposal Method Neutralize and flush to sewer if permitted by State, County or local regulations, or neutralize and dispose of sludge at a landfill.

VIII. Special Protection Information

Eye Protection Chemical workers goggles mandatory, plus face shield as necessary.

Skin Protection Rubber/plastic gloves with gauntlets.

Respiratory Protection (specific type) Not generally required.

Ventilation Recommended N.A.

Other Protection Rubber apron or plastic suits, rubber safety boots or similar protective clothing as necessary (all optional). Safety showers and eye wash station in work areas.

IX. Special Precautions

Precautions to be taken in Handling and Storing Do not store in metal containers. Provide venting for rubber-lined steel to avoid potential pressure build-up if lining fails.

Other Precautions None

MATERIAL SAFETY DATA SHEET

EXXON
CHEMICAL

CALLAWAY CHEMICAL COMPANY

A Division of EXXON CHEMICAL COMPANY
P.O. Box 2325, Columbus, Georgia 31903-3525

JAYFLOC 803

PAGE: 1
DATE PREPARED: DEC 27, 1980
NO.: PO

SECTION 1 PRODUCT IDENTIFICATION & EMERGENCY INFORMATION

PRODUCT NAME: JAYFLOC 803

CHEMICAL NAME:
An Anionic Polyacrylamide in Water in Oil Emulsion

CHEMICAL FAMILY:
Anionic Polyacrylamide

PRODUCT DESCRIPTION:
Milky white/translucent liquid, slight hydrocarbon odor

EMERGENCY TELEPHONE NUMBERS: CALLAWAY CHEMICAL COMPANY 404-576-2000
CHEMTREC 800-424-9300

SECTION 2 HAZARDOUS INGREDIENT INFORMATION

The composition of this mixture may be proprietary information. In the event of a medical emergency, compositional information will be provided to a physician or nurse. This product is hazardous as defined in 29 CFR 1910.1200, based on the following compositional information:

COMPONENT
Petroleum Distillate
Anionic Polyacrylamide

OSHA HAZARD
Irritant to eyes and skin
Irritant to eyes and skin

For additional information see Section 3.

SECTION 3 HEALTH INFORMATION & PROTECTION

NATURE OF HAZARD

EYE CONTACT:
Irritating, and will injure eye tissue if not removed promptly.

SKIN CONTACT:
Irritating.
Low order of toxicity.

INHALATION:
Irritating to eyes and respiratory tract in high concentrations.

INGESTION:
Small amounts of the liquid aspirated into the respiratory system during ingestion, or from vomiting, may cause bronchiopneumonia or pulmonary edema.

FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention.

SKIN CONTACT:
Flush with large amounts of water; use soap if available.
Remove grossly contaminated clothing, including shoes, and launder before reuse.



MATERIAL SAFETY DATA SHEET

CALLAWAY CHEMICAL COMPANY

A Division of EXXON CHEMICAL COMPANY
P.O. Box 2335, Columbus, Georgia 31903-3535

JAYFLOC 803

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If irritation persists, seek medical attention.

INHALATION:

Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

INGESTION:

If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

WORKPLACE EXPOSURE LIMITS

EXXON RECOMMENDS THE FOLLOWING OCCUPATIONAL EXPOSURE LIMITS:
200 ppm total hydrocarbon based on composition.

PRECAUTIONS

PERSONAL PROTECTION:

For open systems where contact is likely, wear long sleeves, chemical resistant gloves, and chemical goggles.
Where contact may occur, wear long sleeves and safety glasses with side shields.
Where concentrations in air may exceed the limits given in this Section and engineering, work practice or other means of exposure reduction are not adequate, NIOSH/MSHA approved respirators may be necessary to prevent overexposure by inhalation.

VENTILATION:

The use of mechanical dilution ventilation is recommended whenever this product is used in a confined space, is heated above ambient temperatures, or is agitated.

SECTION 4 FIRE & EXPLOSION HAZARD.

FLASHPOINT: > 200 Deg F. NOTE: Setflash CC
FLAMMABLE LIMITS: NOTE: Not applicable
AUTOIGNITION TEMPERATURE: NOTE: Not Available

GENERAL HAZARD:

Low Hazard, liquid can burn upon heating to temperatures at or above the flashpoint.
"Empty" containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.
Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner, or properly disposed of.

FIRE FIGHTING:

Use water to cool fire-exposed surfaces and to protect personnel. Isolate "fuel" supply from fire. Use foam, dry chemical, or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.



MATERIAL SAFETY DATA SHEET

CALLAWAY CHEMICAL COMPANY

A Division of EXXON CHEMICAL COMPANY
P.O. Box 3338, Columbus, Georgia 31903-2688

JAYFLOC 803

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DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS:
No Unusual

SECTION 5 SPILL CONTROL PROCEDURE

LAND SPILL:

Eliminate sources of ignition. Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is subject to CERCLA reporting (see Section 7) notify the National Response Center.

Prevent liquid from entering sewers, watercourses, or low areas. Contain spilled liquid with sand or earth.

Recover by pumping or with a suitable absorbent.

If liquid is too viscous for pumping, scrape up.

Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

WATER SPILL:

Remove from surface by skimming or with suitable absorbents. Do not use dispersants. Consult an expert on disposal of recovered material, and ensure conformity to local disposal regulations.

SECTION 6 NOTES

NOTES:

Protect from freezing.

SECTION 7 REGULATORY INFORMATION

DEPARTMENT OF TRANSPORTATION (DOT):

DOT HAZARD CLASS: Not regulated

DOT IDENTIFICATION NUMBER: Not Available

TSCA:

Components of this product are listed on the TSCA Inventory.

CERCLA:

If this product is accidentally spilled, it is not subject to any special reporting under the requirements of the Comprehensive Response, Compensation, and Liability Act (CERCLA). We recommend you contact local authorities to determine if there may be other local reporting requirements.

SARA TITLE III:

Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard categories:

Immediate health.

This product does not contain Section 313 Reportable Ingredients.



MATERIAL SAFETY DATA SHEET

CALLAWAY CHEMICAL COMPANY

A Division of EXXON CHEMICAL COMPANY
P.O. Box 2336, Columbus, Georgia 31902-2336

JAYFLOC 803

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SECTION 8 TYPICAL PHYSICAL & CHEMICAL PROPERTIES

SPECIFIC GRAVITY:

0.98 to 1.12 @ 77 F

SOLUBILITY IN WATER, WT. % AT 'F:

Soluble

SP. GRAV. OF VAPOR, at 1 atm (Air=1):

Not available

EVAPORATION RATE, n-Bu Acetate=1:

Less than 1

VAPOR PRESSURE, mmHg at 'F:

< 10 AT 77 F

VISCOSITY OF LIQUID, CST AT 'F:

400 - 2000 CP AT 77 F

FREEZING/MELTING POINT, 'F:

10 to 32 F

BOILING POINT, 'F:

312 to 370

SECTION 9 REACTIVITY DATA

STABILITY:

Stable

CONDITIONS TO AVOID INSTABILITY:

Avoid temperatures above 200 F

Avoid temperatures below 32 F

HAZARDOUS POLYMERIZATION:

Will not occur

MATERIALS AND CONDITIONS TO AVOID INCOMPATIBILITY:

Contact with water forms a gel at product solid content

greater than 10%.

HAZARDOUS DECOMPOSITION PRODUCTS:

None

SECTION 10 STORAGE AND HANDLING

ELECTROSTATIC ACCUMULATION HAZARD:

Unknown, use proper grounding procedure

STORAGE TEMPERATURE, 'F:

Keep from freezing

STORAGE/TRANSPORT PRESSURE, mmHg:

Atmospheric

LOADING/UNLOADING TEMPERATURE, 'F:

Keep from freezing

VISC. AT LOADING/UNLOADING TEMP., cSt:

400 to 2000 cps

REVISION SUMMARY:

Since AUGUST 7, 1990 this MSDS has been revised in Section(s):

2, 4, 5, 7

REFERENCE NUMBER:

HOHA-P-10368

DATE PREPARED:

December 27, 1990

SUPERSEDES ISSUE DATE:

August 7, 1990

FOR ADDITIONAL PRODUCT INFORMATION, CONTACT YOUR TECHNICAL SALES REPRESENTATIVE
FOR ADDITIONAL HEALTH/SAFETY INFORMATION, CALL 713-870-6885

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AGAINST PATENT INFRINGEMENT.

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 15216

Page: 1

PRODUCT NAME: CAUSTIC SODA SOLUTION 50%

Effective Date: 02/07/90 Date Printed: 03/29/90

MSDS:000101

1. INGREDIENTS: (% w/w, unless otherwise noted)

Sodium hydroxide (NaOH)	CAS# 001310-73-2	48.5-50.5%
Sodium carbonate (Na ₂ CO ₃)	CAS# 000497-19-8	<0.2%
Sodium chloride (NaCl)	CAS# 007647-14-5	<1.0%
Water	CAS# 007732-18-5	BAL

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: Approximately 293F, 145C
FREEZING POINT: Approximately 58F, 14C
VAP. PRESS: 1.5 mmHg, 0.2 kPa @ 20C
VAP. DENSITY: Not applicable
SOL. IN WATER: Water solution
SP. GRAVITY: @ 20C (Dens.) 1.52 g/ml
APPEARANCE: Colorless to slightly colored liquid.
ODOR: No odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None
METHOD USED: Not applicable

FLAMMABLE LIMITS
LFL: Not applic.
UFL: Not applic.

EXTINGUISHING MEDIA: Non-combustible.

FIRE & EXPLOSION HAZARDS: In water solution caustic can react

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MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 15216

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PRODUCT NAME: CAUSTIC SODA SOLUTION 50%

Effective Date: 02/07/90 Date Printed: 03/29/90

MSDS:000101

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

with amphoteric metals (such as aluminum) generating hydrogen which is flammable and/or explosive if ignited.

FIRE-FIGHTING EQUIPMENT: Wear self-contained (positive-pressure if available) breathing apparatus and full protective clothing.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Product absorbs carbon dioxide from the air. Keep containers closed and sealed.

INCOMPATIBILITY: Water and acid. Product is strong caustic alkali. May react violently with water, acid, and a number of organic compounds. Caustic reacts rapidly with aluminum, tin, and zinc. It will also react with bronze and brass.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Only trained and properly protected personnel should be involved in spill cleanup operations. Acting cautiously, small accidental spills of caustic soda solution should be carefully flushed with water. Dilute acid, preferably acetic acid, may be used to neutralize only the final traces of caustic after flushing.

DISPOSAL METHOD: Disposal of caustic soda must meet all federal, state, and local regulations. Contact The Dow Chemical Company for additional information.

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MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 15216

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PRODUCT NAME: CAUSTIC SODA SOLUTION 50%

Effective Date: 02/07/90 Date Printed: 03/29/90

MSDS:000101

6. HEALTH HAZARD DATA:

EYE: May cause severe irritation with corneal injury and result in permanent impairment of vision, even blindness. Dusts may irritate eyes.

SKIN CONTACT: Short single exposure may cause severe skin burns.

SKIN ABSORPTION: A single prolonged skin exposure is not likely to result in absorption of harmful amounts. The dermal LD50 has not been determined.

INGESTION: May cause gastrointestinal irritation or ulceration and severe burns of the mouth and throat. Single dose oral LD50 has not been determined.

INHALATION: Dusts or mists may cause severe irritation to upper respiratory tract.

SYSTEMIC & OTHER EFFECTS: No relevant information found.

7. FIRST AID:

EYES: WATER is the only accepted method of removal of caustic soda (lye) from the eyes or skin. You may have 10 seconds or less to avoid serious permanent injury. Therefore, IMMEDIATE first aid must be given after any injurious exposure. Moving the victim from water access for transport to medical aid should be done only on the advice of qualified medical personnel. While transporting victim to a medical facility, continue washing if possible.

In case of eye contact, wash eyes immediately and continuously for 30 minutes. Call for medical assistance immediately.

SKIN: Immediate continued and thorough washing in flowing water for 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential. Wash contaminated clothing before reuse. Destroy contaminated shoes.

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MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 15216

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PRODUCT NAME: CAUSTIC SODA SOLUTION 50%

Effective Date: 02/07/90 Date Printed: 03/29/90

MSDS:000101

7. FIRST AID: (CONTINUED)

INGESTION: Do not induce vomiting. Give large amounts of water or milk if available and transport to medical facility.

INHALATION: Remove to fresh air if effects occur. Consult medical.

NOTE TO PHYSICIAN: Corrosive. May cause stricture. If lavage is performed, suggest endotracheal and/or esophagoscopy control. Material is strong alkali. If burn is present, treat as any thermal burn, after decontamination. For burns of skin only. Eye irrigation may be necessary for an extended period of time to remove as much caustic as possible. Duration of irrigation and treatment is at the discretion of medical personnel. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): Sodium hydroxide: OSHA PEL and ACGIH TLV are 2 mg/m³ Ceiling.

VENTILATION: Control airborne concentrations below the exposure guideline. Good general ventilation sufficient for most operations.

RESPIRATORY PROTECTION: In misty atmospheres, use an approved mist respirator. If respiratory irritation is experienced, use an approved air-purifying respirator.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, hard hat with face-shield or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse.

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PRODUCT NAME: CAUSTIC SODA SOLUTION 50%

Effective Date: 02/07/90 Date Printed: 03/29/90

MSDS:000101

8. HANDLING PRECAUTIONS: (CONTINUED)

EYE PROTECTION: Use chemical goggles. Full face shield in addition to goggles may be desirable to protect face. Maintain eye wash fountain and safety shower at or near work area.

9. ADDITIONAL INFORMATION:

REGULATORY REQUIREMENTS:

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Prevent eye and skin contact. Do not breathe dusts or mists.

Avoid storing next to strong acids. Caustic should be stored in clean, dry areas. Do not store in underground tanks. Product absorbs CO₂ from air. Keep containers closed and sealed.

SPECIAL PRECAUTIONS FOR DILUTING CAUSTIC SODA SOLUTION:

1. ALWAYS add caustic soda solution to water with constant agitation. NEVER add water to the caustic soda solution.
2. The water should be lukewarm (80-100°F). NEVER start with hot or cold water.

The addition of caustic soda to liquid will cause a rise in temperature. If caustic soda becomes concentrated in one area, or is added too rapidly, or is added to hot or cold liquid, a rapid temperature increase can result in DANGEROUS mists or boiling or spattering which may cause an immediate VIOLENT ERUPTION.

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MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 15216

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PRODUCT NAME: CAUSTIC SODA SOLUTION 50%

Effective Date: 02/07/90 Date Printed: 03/29/90

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9. ADDITIONAL INFORMATION: (CONTINUED)

MSDS STATUS: Revised Sections 1 - 4 and 9.

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For Further Information.

*** An Operating Unit of The Dow Chemical Company**

Zebra Mussel Control Treatment
August 26, 1994

Introduction - Zebra Mussel Infestation

To support the refinery operations, Amoco pumps approximately 120 to 130 million gallons per day (MGD) of water from Lake Michigan. The water is used for once-through non-contact cooling water, process water, fire water, and cooling tower make-up water. The refinery intake structure extends approximately 1600 feet into Lake Michigan and is approximately 15 feet below the surface of the water. Water is returned to the lake through two NPDES-permitted outfalls: one for non-contact cooling water (Outfall 002), and one for treated process wastewater (Outfall 001).

Zebra mussels pose a serious threat to the safe and reliable operation of the Whiting Refinery. Zebra mussel infestation was first observed in the refinery intake water structure in October 1990. Since Spring 1991, Amoco has implemented a zebra mussel treatment program to control the infestation of its intake structure.

Treatment Program

To prevent the continued infestation of zebra mussels in the intake structure, Amoco plans to continue the same zebra mussel treatment program used for the last three years.

- A. Treatment Chemicals: The treatment program utilizes two different chemicals: sodium hypochlorite (Nalco 7341 liquid), and sodium bisulfite (Nalco 7408). The sodium hypochlorite is in a 12.5% solution which is applied into the intake sparge line going to the intake structure. This is designed to treat only the interior of the intake water system. The application of sodium hypochlorite will result in a free residual chlorine concentration of about 0.3-0.5 ppm in the intake water supply.

The sodium bisulfite is used for treatment of No. 6 separator effluent at Outfall 002 only if necessary to prevent residual chlorine from exceeding the 0.05 ppm limit.

Material Safety Data Sheets (MSDSs are provided herein for these chemicals).

- B. Frequency: The treatment program typically consists of three-to-four, two-to-three week continuous treatment periods per year, during the months of May through October.
- C. Monitoring: During treatment, total chlorine is monitored in two separate locations for system control purposes: intake and No. 6 separator effluent (Outfall 002). The monitoring is conducted using chemical oxidant residual potentiometers (ORP meters) which measure Total Residual Oxidant (TRO) in the water. In addition, Outfall 002 effluent is monitored for Total Residual Chlorine (TRC) using EPA method APHA 4500-Cl-I, as required by the permit. Outfall 002 (non-contact cooling water) is representative of both lake outfalls during zebra mussel treatment. The purpose of the intake monitoring is to verify sufficient chlorine concentration (about 0.5 ppm free residual) in the intake water for effective treatment of the refinery once-through system.

The chemical oxidant potentiometer is used for monitoring Outfall 002 effluent to automatically apply sodium bisulfite if required to prevent a permit exceedance.

In addition, bio-boxes are installed at the outlet of selected process units to visually monitor the treatment effectiveness, as necessary. Treatment effectiveness is also monitored by a contract diver during routine visual inspections of the intake structure.

Attachments

94094WHI0013

MATERIAL SAFETY DATA SHEET



PRODUCT

NALCO 7341 LIQUID

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: NALCO 7341 LIQUID

DESCRIPTION: Sodium hypochlorite solution

NFPA 704M/HMIS RATING: 2/2 HEALTH 0/0 FLAMMABILITY 0/0 REACTIVITY OXY OTHER
0-Insignificant 1-Slight 2-Moderate 3-High 4-Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation has identified the following chemical ingredient(s) as hazardous under OSHA's Hazard Communication Rule, 29 CFR 1910.1200. Consult Section 14 for the nature of the hazard(s).

INGREDIENT(S)	CAS #	APPROX. %
Sodium hypochlorite	7681-52-9	12.5

SECTION 3 PRECAUTIONARY LABEL INFORMATION

DANGER: Corrosive. May cause severe skin irritation or chemical burns to broken skin. Causes eye damage. Do not get in eyes, on skin, or on clothing. Wear goggles and face shield and rubber gloves when handling this product. Wash after handling. Avoid breathing of vapors. Vacate poorly ventilated areas as soon as possible. Do not return until odors have dissipated.

SECTION 4 FIRST AID INFORMATION

EYES: Flush with water for at least 15 minutes. Call a physician at once.

SKIN: Wash with plenty of soap and water.

INGESTION: If swallowed, drink large quantities of milk or gelatin solution or if these are not available, drink large quantities of water. Do not give vinegar or other acids. Do not induce vomiting. Call a physician at once.

INHALATION: Remove to fresh air. Treat symptoms. Call a physician.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsions may be needed.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin, Inhalation

EYE CONTACT: Corrosive to the eyes with possible permanent damage



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 7341 LIQUID

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 5 HEALTH EFFECTS INFORMATION

(CONTINUED)

SKIN CONTACT: depending on the length of exposure and on the first aid action given.
Corrosive to the skin, possibly resulting in third degree burns depending on the length of exposure and on the first aid action given.

INGESTION: Can be harmful.

INHALATION: Can be corrosive to the mucous membranes and the lungs.

SYMPTOMS OF EXPOSURE: A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.

SECTION 6 TOXICOLOGY INFORMATION

TOXICITY STUDIES: No toxicity studies have been conducted on this product.

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Yellow	FORM: Liquid	ODOR: Bleach
SOLUBILITY IN WATER:	Completely	
SPECIFIC GRAVITY:	1.2	ASTM D-1298
pH (NEAT) =	12.5 - 13.5	ASTM E-70
FREEZE POINT:	-15 Degrees F	ASTM D-1177
FLASH POINT:	None (FMCC)	ASTM D-93

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: None (FMCC) ASTM D-93

EXTINGUISHING MEDIA: Not applicable

SECTION 9 REACTIVITY INFORMATION

Strong oxidizing agent. Mix only with water according to label directions. Mixing this product with gross filth such as feces, urine, etc. or with ammonia, acids, detergents or other chemicals may release hazardous gases, irritating to eyes, lungs and mucous membranes.

INCOMPATIBILITY: Avoid contact with organic materials (eg. rags, sawdust, hydrocarbon oils or solvents) and avoid reducing agents (eg. hydrazine,



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 7341 LIQUID

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 9 REACTIVITY INFORMATION

(CONTINUED)

sulfites, sulfides, aluminum or magnesium dust) which can generate heat, fires, explosions and the release of toxic fumes. This product may react vigorously with amine, ammonium acetate, ammonium oxalate, and acids.

STORAGE: Store in a cool, dry area away from direct sunlight.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, CO₂, HCl may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: If it is possible to generate significant levels of vapors or mists, a NIOSH approved or equivalent respirator is recommended.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended. Additionally, local exhaust ventilation is recommended where vapors, mists or aerosols may be released.

PROTECTIVE EQUIPMENT: Wear gloves, boots, apron and a face shield with chemical splash goggles. A full slicker suit is recommended if gross exposure is possible.

The availability of an eye wash fountain and safety shower is recommended.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)

SPILL CONTROL AND RECOVERY:

In case of spill, flood area with large quantities of water. Rinse empty container thoroughly with water and either return to manufacturer or discard by placing in trash collection or burying in an approved landfill.

For large indoor spills, evacuate employees and ventilate area. Those responsible for control and recovery should wear the protective equipment specified in Section 10.



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 7341 LIQUID

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 11 SPILL AND DISPOSAL INFORMATION

(CONTINUED)

DISPOSAL: If this product becomes a waste, it meets the criteria of a hazardous waste as defined under the Resources Conservation and Recovery Act (RCRA) 40 CFR 261. Hazardous Waste D002.

Product or rinsate that cannot be used, should be diluted with water and disposed of in a sanitary sewer. Do not contaminate water, food or feed by storage, disposal or cleaning of equipment.

SECTION 12 ENVIRONMENTAL INFORMATION

ENVIRONMENTAL HAZARDS: This pesticide is toxic to fish. Keep out of lakes, streams or ponds. Treated effluent may not be discharged into lakes, streams, ponds or public waters without a valid discharge permit. For guidance, contact the regional office of the Environmental Protection Agency.

AQUATIC DATA:

96 hour static acute LC50 to Rainbow Trout = 1.94 ppm

96 hour static acute LC50 to Bluegill Sunfish = 5.3 ppm

48 hour static acute LC50 to Daphnia = 1.57 ppm

If released into the environment, see CERCLA in Section 14.

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - HYPOCHLORITE SOLUTION
CORROSIVE MATERIAL UN 1791

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:
Based on our hazard evaluation, the following ingredient in this product is hazardous and the reason is shown below.

Sodium hypochlorite - Corrosive, oxidizer

CERCLA/SUPERFUND, 40 CFR 117, 302:

MATERIAL SAFETY DATA SHEET



PRODUCT

NALCO 7341 LIQUID

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

This product contains sodium hypochlorite, a Reportable Quantity (RQ) substance and if 800 pounds of product are released, it requires notification to the NATIONAL RESPONSE CENTER, WASHINGTON, D. C. (1-800-424-8802).

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986
(TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):
This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):
Our hazard evaluation has found this product to be hazardous. The product should be reported under the following EPA hazard categories:

- XX Immediate (acute) health hazard
- Delayed (chronic) health hazard
- XX Fire hazard
- Sudden release of pressure hazard
- Reactive hazard

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):
This product does not contain ingredients (at a level of 1% or greater) on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA):
The chemical ingredients in this product are on the 8(b) Inventory List (40 CFR 710).

FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA):

EPA Reg. No. 1744-19-1706.

This product is registered for use as a microorganism control chemical used in industrial recirculating cooling water tower systems. In all cases follow instructions on the product label.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:
Consult Section 11 for RCRA classification.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15
(formerly Sec. 307), 40 CFR 116 (formerly Sec. 311):

This product contains the following ingredient covered by the Clean Water Act:

Sodium hypochlorite - Section 311



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 7341 LIQUID

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:

This product does not contain ingredients covered by the Clean Air Act.

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65:

None of the chemicals on the current Proposition 65 list are known to be present in this product.

MICHIGAN CRITICAL MATERIALS:

This product contains the following substance(s) identified on the Michigan Critical Materials Register:

Sodium hypochlorite

STATE RIGHT TO KNOW LAWS:

The following ingredient(s) are disclosed for compliance with State Right To Know Laws:

Sodium hypochlorite 7681-52-9

Water 7732-18-5

SECTION 15 ADDITIONAL INFORMATION

None

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

SECTION 17 BIBLIOGRAPHY

ANNUAL REPORT ON CARCINOGENS, U.S. Department of Health and Human Services, Public Health Service, PB 33-135855, 1983.

CASARETT AND DOULL'S TOXICOLOGY, THE BASIC SCIENCE OF POISONS, Doull, J., Klaassen, C. D., and Adair, M. O., eds., Macmillan Publishing Company, Inc.,



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 7341 LIQUID

Emergency Telephone Number
Medical (708) 920-1510 (24 hours)

SECTION 17 BIBLIOGRAPHY

(CONTINUED)

N. Y., 2nd edition, 1980.

CHEMICAL HAZARDS OF THE WORKPLACE, Proctor, N. H., and Hughes, J. P., eds., J. P. Lipincott Company, N.Y., 1981.

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, Sax, N. Irving, ed., Van Nostrand Reinhold Company, N.Y., 6th edition, 1984.

IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN, Geneva: World Health Organization, International Agency for Research on Cancer, 1972-1977.

PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, Clayton, G. D., Clayton, F. E., eds., John Wiley and Sons, N. Y., 3rd edition, Vol. 2 A-C, 1981.

REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, 1983 supplement of 1981-1982 edition, Vol. 1-3, OH, 1984.

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.

PREPARED BY: Ricky A. Stackhouse PhD., Toxicologist
DATE CHANGED: 11/05/90 DATE PRINTED: 03/06/91



MATERIAL SAFETY DATA SHEET

PRODUCT

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 7408 CHLORINE OXYGEN S/A

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

C-70 (Class D2B). The product contains the following substance(s), from the Ingredient Disclosure List or has been evaluated based on its toxicological properties, to contain the following hazardous ingredient(s):

Chemical Name	CAS #	% Concentration Range
Sodium bisulfite	7631-90-5	20-40

SECTION 15 ADDITIONAL INFORMATION

None

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

SECTION 17 BIBLIOGRAPHY

ANNUAL REPORT ON CARCINOGENS, U.S. Department of Health and Human Services, Public Health Service, PB 33-135855, 1983.

CASARETT AND DOULL'S TOXICOLOGY, THE BASIC SCIENCE OF POISONS, Doull, J., Klaassen, C. D., and Adair, M. O., eds., Macmillan Publishing Company, Inc., N. Y., 2nd edition, 1980.

CHEMICAL HAZARDS OF THE WORKPLACE, Proctor, N. H., and Hughes, J. P., eds., J. P. Lipincott Company, N.Y., 1981.

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, Sax, N. Irving, ed., Van Nostrand Reinhold Company, N.Y., 6th edition, 1984.

IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN, Geneva: World Health Organization, International Agency for Research on Cancer, 1972-1977.

PATY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, Clayton, G. D., Clayton, F. E., eds., John Wiley and Sons, N. Y., 3rd edition, Vol. 2 A-C, 1981.



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 7408 CHLORINE OXYGEN SOA

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 17 BIBLIOGRAPHY

(CONTINUED)

REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, 1983 supplement of 1981-1982 edition, Vol. 1-3, OH, 1984.

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.

PREPARED BY: Ricky A. Stackhouse PhD., Toxicologist

DATE CHANGED: 10/29/90

DATE PRINTED: 03/06/91



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 7408 CHLORINE OXYGEN SO

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

This product does not contain ingredients (at a level of 1% or greater) on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA):

The chemical ingredients in this product are on the 8(b) Inventory List (40 CFR 710).

FOOD AND DRUG ADMINISTRATION (FDA):

Federal Food, Drug and Cosmetic Act:

When use situations necessitate compliance with FDA regulations, this product is acceptable under 21 CFR 173.310 - Boiler Water Additives.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:
Consult Section 11 for RCRA classification.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15
(formerly Sec. 307), 40 CFR 116 (formerly Sec. 311):

This product contains the following ingredient covered by the Clean Water Act:

Sodium bisulfite - Section 311

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:
This product does not contain ingredients covered by the Clean Air Act.

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65:

None of the chemicals on the current Proposition 65 list are known to be present in this product.

MICHIGAN CRITICAL MATERIALS:

This product does not contain ingredients listed on the Michigan Critical Materials Register.

STATE RIGHT TO KNOW LAWS:

The following ingredient(s) are disclosed for compliance with State Right To Know Laws:

Sodium bisulfite	7631-90-5
Water	7732-18-5

INTERNATIONAL REGULATIONS:

This is a WHMIS controlled product under The House of Commons of Canada Bill



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 7408 CHLORINE OXYGEN S/A

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:

Based on our hazard evaluation, the following ingredient in this product is hazardous and the reason is shown below.

Sodium bisulfite - Eye irritant, liberates SO₂ gas which is an irritant

Sodium bisulfite = TWA 5 mg/m³ ACGIH/TLV

Sulfur dioxide (CAS No. 7446-09-5) = TWA 2 ppm, STEL 5 ppm ACGIH/TLV
5.2 mg/m³, 13 mg/m³ ACGIH/TLV

Sodium bisulfite = TWA 5 mg/m³ ACGIH/TLV

Sulfur dioxide (CAS No. 7446-09-5) = TWA 2 ppm, STEL 5 ppm OSHA/PEL
5 mg/m³, 10 mg/m³ OSHA/PEL

We have shown the TLV and PEL for sulfur dioxide because this gas may be generated during combustion or contact with strong acids.

CERCLA/SUPERFUND, 40 CFR 117, 302:

This product contains sodium bisulfite, a Reportable Quantity (RQ) substance and if 12,000 pounds of product are released, it requires notification to the NATIONAL RESPONSE CENTER, WASHINGTON, D. C. (1-800-424-8802).

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986
(TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):

This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following EPA hazard categories:

- XX Immediate (acute) health hazard
- Delayed (chronic) health hazard
- Fire hazard
- Sudden release of pressure hazard
- Reactive hazard

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):



MATERIAL SAFETY DATA SHEET

PRODUCT **NALCO 7408 CHLORINE OXYGEN SO**

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)

SPILL CONTROL AND RECOVERY:

Small liquid spills: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 14.

Large liquid spills: Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 14.

For large indoor spills, evacuate employees and ventilate area. Those responsible for control and recovery should wear the protective equipment specified in Section 10.

DISPOSAL: If this product becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

As a non-hazardous liquid waste, it should be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to an industrial waste landfill. A non-hazardous liquid waste can also be deep-well injected in accordance with local, state, and federal regulations.

SECTION 12 ENVIRONMENTAL INFORMATION

BIOCHEMICAL OXYGEN DEMAND (5-day BOD): 32,000 mg/L

CHEMICAL OXYGEN DEMAND (COD): 52,350 mg/L

TOTAL ORGANIC CARBON (TOC): 35,650 mg/L

If released into the environment, see CERCLA in Section 14.

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

ORM-E NA 9188

CONTAINS

- SODIUM BISULFITE



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 7408 CHLORINE OXYGEN S₂A

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

(CONTINUED)

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: None

EXTINGUISHING MEDIA: Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve SO_x under fire conditions. Containers exposed in a fire should be cooled with water to prevent vapor pressure buildup leading to a rupture.

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: Avoid contact with strong oxidizers (eg. chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permanganates) which can generate heat, fires, explosions and the release of toxic fumes.

Avoid contact with strong acids (eg. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) which can generate heat, splattering or boiling and the release of toxic fumes, specifically sulfur dioxide.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion SO_x may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: Respiratory protection is not normally needed since the volatility and toxicity are low. If significant vapors, mists or aerosols are generated, wear a NIOSH approved or equivalent respirator.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended. Additionally, local exhaust ventilation is recommended where vapors, mists or aerosols may be released.

PROTECTIVE EQUIPMENT: Use impermeable gloves and chemical splash goggles when attaching feeding equipment or doing maintenance.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 7408 CHLORINE OXYGEN SODIUM

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 5 HEALTH EFFECTS INFORMATION

(CONTINUED)

SKIN CONTACT: Can cause moderate irritation.
INGESTION: Can be harmful.

SYMPTOMS OF EXPOSURE:

ACUTE: Irritation of nose, eyes, throat and upper respiratory tract is possible if sulfur dioxide gas is inhaled. Sulfur dioxide gas is formed when the product contacts strong acids.

AGGRAVATION OF EXISTING CONDITIONS: Persons with asthma or other respiratory problems should avoid exposure to the product.

SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES: Acute toxicity studies have not been conducted on this product, but acute studies have been conducted on a similar product. The results are shown below.

ACUTE ORAL TOXICITY (ALBINO RATS): LD50 = 4.1 g/kg

95% Confidence Limit = 3.6 - 4.7 g/kg

ACUTE DERMAL TOXICITY (ALBINO RABBITS): LD50 = 3,038 mg/kg

PRIMARY SKIN IRRITATION TEST (ALBINO RABBITS):

SKIN IRRITATION INDEX DRAIZE RATING: 1.0/8.0 Mildly irritating

PRIMARY EYE IRRITATION TEST (ALBINO RABBITS):

EYE IRRITATION INDEX DRAIZE RATING: 9.4/110.0 Mildly irritating

OTHER TOXICITY RESULTS: Ingestion of sulfite can cause an allergic reaction in sensitive individuals. The resultant symptoms can include difficulty breathing, flushed skin and a rash.

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Yellow	FORM: Liquid	ODOR: Pungent sulfurous
DENSITY:	11.4 lbs/gal.	
SOLUBILITY IN WATER:	Completely	
SPECIFIC GRAVITY:	1.37	ASTM D-1298
pH (at 1%) =	4.1	ASTM E-70
FLASH POINT:	None	
VAPOR PRESSURE:	32 (est) mm Hg @ 77 Degrees F	ASTM D-323
EVAPORATION RATE (Ether = 1):	Greater than 1	ASTM D-1901



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 7408 CHLORINE OXYGEN SCA

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: NALCO 7408 CHLORINE OXYGEN SCA
DESCRIPTION: Aqueous sodium bisulfite solution

NFPA 704M/HMIS RATING: 1/1 HEALTH 0/0 FLAMMABILITY 0/0 REACTIVITY 0 OTHER
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation has identified the following chemical ingredient(s) as hazardous under OSHA's Hazard Communication Rule, 29 CFR 1910.1200. Consult Section 14 for the nature of the hazard(s).

INGREDIENT(S)	CAS #	APPROX.%
Sodium bisulfite	7631-90-5	20-40

SECTION 3 PRECAUTIONARY LABEL INFORMATION

CAUTION: May cause irritation to skin and eyes. Avoid contact with skin, eyes and clothing. Do not take internally.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

SECTION 4 FIRST AID INFORMATION

EYES: Flush with water for 15 minutes. Call a physician.
SKIN: Wash thoroughly with soap and rinse with water. Call a physician.
INGESTION: Induce vomiting. Give water. Call a physician.
INHALATION: Remove to fresh air. Treat symptoms. Call a physician.

NOTE TO PHYSICIAN: No specific antidote is known. Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin

EYE CONTACT: Can cause moderate irritation.

REVIEW FACILITY RECORDS, REPORTS, SLM MONITORING DATA CURRENTLY AVAILABLE		CHECK ONE:			
		YES	<input checked="" type="radio"/> NO	N/A	N/E
Explanation: NTA					
Info Source/Location/Date Reviewed		Inspector Notations Pertinent to Upcoming Inspection:			

REVIEW MAPS SHOWING FACILITY LAYOUT AND WASTE MANAGEMENT/ DISCHARGE SITES		CHECK ONE:			
		YES	<input checked="" type="radio"/> NO	N/A	N/E
Explanation: NTA					
Info Source/Location/Date Reviewed		Inspector Notations Pertinent to Upcoming Inspection:			

REVIEW RECORDS OF CITIZEN'S COMPLAINTS		CHECK ONE:			
		YES	<input checked="" type="radio"/> NO	N/A	N/E
Explanation: NTA					
Info Source/Location/Date Reviewed		Inspector Notations Pertinent to Upcoming Inspection:			

REVIEW ANY PROCESS INFORMATION		CHECK ONE:			
		YES	<input checked="" type="radio"/> NO	N/A	N/E
Explanation: NTA					
Info Source/Location/Date Reviewed		Inspector Notations Pertinent to Upcoming Inspection:			

REVIEW AND DETERMINE APPLICABLE REQUIREMENTS		CHECK ONE:			
		YES	<input checked="" type="radio"/> NO	N/A	N/E
Explanation: NTA					
Info Source/Location/Date Reviewed		Inspector Notations Pertinent to Upcoming Inspection:			

Y ADDITIONAL COMMENTS:

Name and Location of Facility to be Inspected	NPDHS Permit #	GPS Coordinates Recorded	Date to be Inspected	Inspector
Name: BP Products Town/City: Whiting County: Laid	IN 0000188	N/A	6-2-07	NRK

IF NO, N/A, N/E: IF YES:	REVIEW RELEVANT PROGRAM PERMIT AND PERMIT APPLICATIONS	CHECK ONE: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A <input type="checkbox"/> N/E <input type="checkbox"/>
	Provide explanation or description why: NTA	
IF YES:	Info Source/ Location/Date Reviewed	Inspector Notations Pertinent to Upcoming Inspection:

IF NO, N/A, N/E: IF YES:	REVIEW PRIOR INSPECTION HISTORY & REPORTS RELEVANT TO THE PROGRAM INSPECTION, PARTICULARLY ANY OUTSTANDING OR UNRESOLVED ISSUES	CHECK ONE: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A <input type="checkbox"/> N/E <input type="checkbox"/>
	Explanation: NTA	
IF YES:	Info Source/Location/Date Reviewed	Inspector Notations Pertinent to Upcoming Inspection:

IF NO, N/A, N/E: IF YES:	REVIEW PRIOR COMPLIANCE AND ENFORCEMENT HISTORY RELEVANT TO PROGRAM INSPECTION, PARTICULARLY: WARNINGS AND MINOR VIOLATIONS, FORMAL ACTIONS (OI &/OR EPA)	CHECK ONE: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A <input type="checkbox"/> N/E <input type="checkbox"/>
	Explanation: NTA	
IF YES:	Info Source/Location/Date Reviewed	Inspector Notations Pertinent to Upcoming Inspection:

IF NO, N/A, N/E: IF YES:	REVIEW FACILITY RESPONSES TO ALL OF THE ABOVE	CHECK ONE: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A <input type="checkbox"/> N/E <input type="checkbox"/>
	Explanation: NTA	
IF YES:	Info Source/Location/Date Reviewed	Inspector Notations Pertinent to Upcoming Inspection:

NTA = NO TAIL ALLOWED

copy

June 25, 2002

Cashier
Office of Water Management
PO Box 6015
Indianapolis, IN 46206-6015

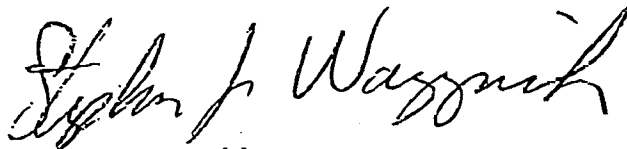
The BP Amoco Whiting Refinery has completed training for certified personnel with June 2002 renewal dates. All three individuals met their requirement by reviewing the series of Amoco-developed training guides approved by IDEM under CE number WWT96-2177 and WWT96-2108. The development of the Amoco training guides was overseen by George T. Cook, the wastewater treatment plant superintendent who retired in October of 1998. This year's quizzes were reviewed and verified by myself or by D.J. Olen, the Wastewater Treatment Plant Supervisor who replaced G.T. Cook as the BP Amoco Training Provider.

Included are the certification renewal statements from IDEM for Mr. Hogg and Mr. Olen. My Snyder states that he never received his renewal letter. Included are their credit report forms, and the required \$90.00 renewal fees.

The table below provides necessary information for each employee, including name, certification number, license class/grade and number of CE hours completed during this renewal period.

Name	Class/Grade	Certification #	CE Credit Hours
D. Olen	D	14118	20
M. Hogg	C	9843	20
W. Snyder	C	9872	20

If you have any questions regarding Amoco's re-certification program or are in need of any additional information regarding the BP Amoco re-certification program, please feel free to contact me at (219)473-3248 or 5298.



Stephen J. Warzyniak
Optimization Engineer, Wastewater Treatment Plant
BP Amoco, Whiting Refinery
Mail Code 220



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live.

Frank O'Bannon
Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.in.gov/idem

May 1, 2002

65-42 OAPS
Mr. David J. Olen
3023-100th Street
Highland, Indiana 46322

Re: Wastewater Treatment Plant Operator Certification Renewal Statement

Our records indicate that your Class D wastewater treatment plant operator certification No. 14118 has an expiration date of June 30, 2002. In order to renew your certification card, a renewal fee of \$30.00 and this statement should be mailed to the address shown below. All renewal fees must be paid prior to the renewal of your certification card. Your renewal fee, payable to the Indiana Department of Environmental Management, should be mailed to:

Cashier
Department of Environmental Management
100 North Senate Avenue
P.O. Box 7060
Indianapolis, Indiana 46207-7060

NOTICE REGARDING CONTINUING EDUCATION REQUIREMENTS

You are required to obtain the following continuing education contact hours from IDEM-approved training course providers based on the classification of your certification:

Classes I-SP and A-SO	5 contact hours for each two-year renewal period
Classes I, II, A and B	10 contact hours for each two-year renewal period
Classes III, IV, C and D	20 contact hours for each two-year renewal period

Your continuing education requirements must be satisfied in full in order to renew your certification.

OPERATORS IN RESPONSIBLE CHARGE OF A WASTEWATER FACILITY OR FACILITIES

☒ If you are in responsible charge of a wastewater facility, please check this box and list each facility below. We will expedite your renewal application once all renewal requirements have been met. Note that pursuant to 327 IAC 5-22-14(c), certified operators must obtain a duplicate certificate to display in the office of each wastewater treatment plant supervised, if the certified operator supervises more than one wastewater treatment plant.

B.P. PRODUCTS N. AMERICA INC.
WHITING REFINERY W.W.T.P. WHITING IN. 46394

Operators needing a replacement or duplicate certificate(s) must submit a written request including the following information: (1) class of wastewater operator, (2) name and classification of the plant to be operated, (3) date of issuance of the original certificate (if known), and (4) the certificate number.

If you have any questions, please contact Wastewater Continuing Education Program staff at 317-232-8791 or 317-233-0419. Thank you for your prompt attention to this matter.



WHITING REFINERY Federal Credit Union
1339-119th ST. • WHITING, INDIANA 46394

BANK ONE, MERRILLVILLE, IN
MERRILLVILLE, INDIANA
719

No009074

*****90.00 DOLLARS

DATE

06-25-02

AMOUNT

\$90.00*

PAY
TO THE
ORDER
OF

IDEM (OFFICE OF WATER MGMT)
(FROM DAVID OLEN)

AUTHORIZED SIGNATURE

MUST BE PRESENTED WITHIN 90 DAYS

⑈009074⑈ ⑆074000010⑆

⑆35009200⑈


**WATER / WASTEWATER OPERATOR CERTIFICATION
CONTINUING EDUCATION CREDIT REPORT**

State Form 45674 (R / 10-95)

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

To ensure proper credit, the wastewater approval number MUST be submitted.

Training course approval number

WWT

WW 96-2177

WW 96-2108

Contact hours earned

20

Mail completed report to:

Continuing Education Coordinator

(Indicate either Drinking Water or Wastewater) Operator Certification

Indiana Department of Environmental Management

P.O. Box 6015

Indianapolis, IN 46206-6015

☐ Water ☒ Wastewater

To ensure proper credit, complete separate form for Drinking Water and Wastewater.

INSTRUCTIONS: To ensure proper credit, print legibly.

This form must be completed in order for the attendee to get credit. Be sure to record certification number and class / grade for each certification for which you are requesting credit.

Mail original to DEM at the above address (indicate either Drinking Water or Wastewater). Training provider must retain a copy for their records in accordance with 327 IAC 8-12-7.1.

Since this is a form of attendance verification, it is requested that this form be distributed during the latter portion of the training session. No credit will be considered when original signatures are not shown.

Name of certified operator DAVID J. OLEN		Address (number and street) 3023-100TH ST.	
City HIGHLAND	State IN.	ZIP code 46322	Telephone number 219-924-4335

☐ Check here if this is a change of address.Title of training course: **WHITING REFINERY W.W.T.P. TRAINING**Name of organization offering the course: **B.P. PRODUCTS N. AMERICA INC.**Number of contact hours approved for the course: **20****CREDIT APPLIED TO:**

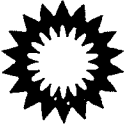
Operator certification number: 14118	Class / Grade: D	Expiration date: 6-30-2002
Operator certification number:	Class / Grade:	Expiration date:
Operator certification number:	Class / Grade:	Expiration date:
Operator certification number:	Class / Grade:	Expiration date:
Operator certification number:	Class / Grade:	Expiration date:

Date attended: **APRIL-MAY 2002** Location attended: **WHITING REFINERY**Number of hours attended and verified: **20**

Signature of instructor or training provider

Signature of operator

bp



CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Whiting Business Unit
2815 Indianapolis Blvd.
PO Box 710
Whiting, IN 46394-0710

November 27, 2002

Mr. Greg Glover
Indiana Department of Environmental Management
Office of Water Management
100 North Senate
Indianapolis, IN 46206-6015

RE: NPDES Permit No. IN 0000108
Exceedance of Daily Maximum Limit for Total Suspended Solids at Outfall 001

Dear Mr. Glover:

This letter serves as a follow-up to our initial phone notification on November 22, 2002, concerning the exceedance of the daily maximum limit for total suspended solids (TSS) at Outfall 001 on November 20, 2002. We became aware of the non-compliance at approximately 2:30 pm (CST) on November 21, 2002 when the initial composite sample analysis was completed. The initial analysis of the November 20 composite sample was 120 mg/l TSS. The discharge loading from Outfall 001 was calculated at 7,506 pounds of TSS. Our daily maximum allowable TSS is 5,694 pounds. We were back in compliance with the TSS discharge loading the next day.

As a precautionary measure BP continued its water shedding program, reduced the outfall flows, and called for a third party analysis of our findings. An investigation is currently underway to identify the cause of the exceedance.

Sincerely,

For Ms. Karleen James
Environmental Superintendent, HSE

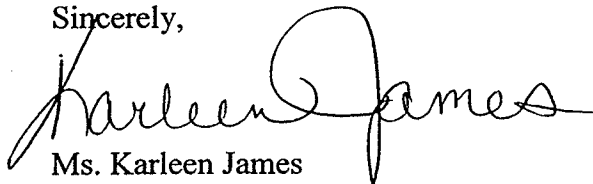
January 27, 2003

Page Two

The watershed program is still in place and we will continue to limit flows as much as possible to allow the treatment plant to recover. Turbidities are back in line and will be monitored closely until the treatment plant is back to normal operations.

If you need any further information concerning this incident, please contact Mr. Richard Harris at 219-473-3321.

Sincerely,

A handwritten signature in cursive script that reads "Karleen James". The signature is written in dark ink and is positioned above the printed name and title.

Ms. Karleen James

Environmental Superintendent, HSE



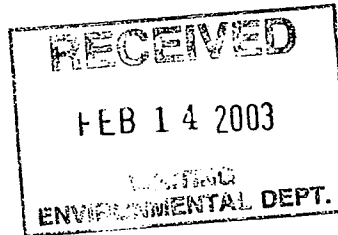
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live.

Frank O'Bannon
Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.in.gov/idem



February 10, 2003

Karleen James
Environmental Superintendent, HSE
BP Products North America, Inc.
Whiting Business Unit
2815 Indianapolis Blvd.
P.O. Box 710
Whiting, Indiana 46394-0710

Dear Ms. James:

Re: January 27, 2003 Exceedence Report
Amoco Whiting Unit
NPDES Permit No. IN0000108
Lake Co.

I am in receipt of your report concerning the exceedence of your facility's Total Suspended Solids (TSS) limit. Although the report is timely, I am concerned about the degree of the exceedence. The discharge of 35,420 lbs. vs a limit of 5,694 lbs., was more than six times the allowable limit. I wonder why the increase in oil recoveries and solids loadings wasn't foreseen and more effectively managed. Consequently, I request an explanation of the excess loadings and the problems with holding them until they could be properly treated. Please reply within twenty (20) days from the date of this letter.

If you have any questions, you may call me at (317) 232-8630, or write to me at the above address.

Sincerely,

Greg Glover
Sr. Environmental Mgr.
Compliance Evaluation Section
Office of Water Quality

bp



CERTIFIED MAIL - 7001 2510 2003 376 5009
RETURN RECEIPT REQUESTED

Whiting Business Unit
2815 Indianapolis Blvd.
PO Box 710
Whiting, IN 46394-0710

January 27, 2003

Mr. Greg Glover
Indiana Department of Environmental Management
Office of Water Management
100 North Senate
Indianapolis, IN 46206-6015

RE: NPDES Permit No. IN 0000108
Exceedance of Daily Maximum Limit for Total Suspended Solids at Outfall 001

Dear Mr. Glover:

This letter serves as a follow-up to our notifications on January 21, 23 and 24, 2003 concerning operational issues at our wastewater treatment plant that were affecting our effluent to Lake Michigan.

IDEM was notified on January 21, 2003 at approximately 9:50 am when a visible sheen and some foaming were seen at Outfall 001 (IDEM Incident No. 3003-01-116). The initial analysis results of the January 21 composite sample were received at approximately 2:00 pm on January 22, 2003. Follow-up results the following morning confirmed that the total discharge loading from Outfall 001 was 35,420 pounds of total suspended solids (TSS). Our daily maximum allowable TSS is 5,694 pounds. This notification was made to IDEM at 11:30 am on January 23, 2003.

On January 24, 2003, an additional notification was made concerning composite sample results that were collected for January 22, 2003. TSS results indicated an exceedance for the daily maximum TSS limit. Calculations identified total discharge loading from Outfall 001 to be 7,756 pounds of TSS. This notification was made to IDEM at 8:40 am on January 24, 2003.

The sample results for composite sample collected on January 23, 2003 were well within the permit limits.

The permit exceedance was caused by an increase in oil recoveries and solids loading from the refinery operations into the pre-treatment system over the period from January 17 through January 19. When high turbidities were noticed, operators followed established procedures to reduce the impact as much as possible. The plant instituted the watershed plan and reduced flows to the plant to reduce stress. The final filters were backwashed, water from the refinery was impounded and more biological media was added to the activated sludge treatment system. While this helped reduce the severity of the situation, some biological material overflowed from the clarifiers and passed through the filters into Lake Michigan.



NONCOMPLIANCE 24-HOUR NOTIFICATION FAX REPORT

State Form 52416 (10-05)

Indiana Department of Environmental Management
Office of Water QualityNick Rasmussen
Bob Simmons

INSTRUCTIONS: Complete all parts of this form and fax it to Office of Water Quality, Compliance Evaluation Section at (317) 232-8637 or 232-8406. Thorough completion of this report will satisfy the Office of Water Quality (OWQ) telephone and 5-day written noncompliance notification reporting requirements of your NPDES permit. To speak with someone in OWQ, call (317) 232-8670.

Any noncompliance which may pose a significant danger to human health or the environment must be immediately reported to the Emergency Response Section spill response line at: (317) 233-7745 or toll free within Indiana at (888) 233-7745.

FACILITY INFORMATION		
Facility Name:	County:	NPDES Permit Number:
BP Products, N.A.	Lake	IN 0000108
Individual Reporting:	Phone Number:	Reporting Date:
R.M. Herrera	219-473-3393	07/13/07

NONCOMPLIANCE INFORMATION				
Date:	Outfall:	Parameter:	Permit Limit: (Units/Daily/Weekly/Ave/Max/Min)	Monitored Value:
07/10/07	002	sheen	NA - narrative for oil sheen	Narrative water quality standards
Date:	Outfall:	Parameter:	Permit Limit: (Units/Daily/Weekly/Ave/Max/Min)	Monitored Value:

Description of the Noncompliance and Its Cause:

On Tuesday July 10 at approximately 7:20 pm, an oil sheen was seen at outfall 002. Estimated release was approximately 1 quart to 1 gallon. The Once Through Cooling Water System (OTCW) had inadvertently received process waste water through a sump connected to the process sewer and OTCW via a temporary pump connection. The process sewer backed up into the sump after a rain storm occurred (approximately 0.8 inches in 20 minutes). Notifications were immediately made to the US coast Guard, NRC, and IDEM (Mike Sutton). The oil release was stopped shortly after 8:00 pm. Our emergency response team responded with absorbents to the OTCW #6 separator as well as our process folks tracking down the source of the leak. IDEM inspector showed up to review the response.

Description of the Period of Noncompliance, Including Exact Dates and Time, and if the Noncompliance has not been Corrected, the Anticipated Time it is Expected to Continue:

The period of non compliance was from approximately 7:20 pm to just after 8pm Tuesday July 10, 2007. A small investigation team was formed and has decided to shut down this temporary system and investigate why this sewer section backed up with this rain event. In anticipation of rain, several steps were taken to lower sewer levels.

Steps Taken or Planned to Reduce, Eliminate, and Prevent Reoccurrence of the Noncompliance:

See above actions and descriptions. This notification suffices our 5 day follow-up requirement.

CERTIFICATION AND SIGNATURE

